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Nordic Universities – do they have any Entrepreneurial Objectives and Strategies?

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Abstract

This paper reports on a survey of the 20 largest Nordic universities, 12 Humboldtian type universities and 8 technical universities, and their espoused objectives and strategies regarding their entrepreneurial and innovation role related to regional and national economic development. The study is based on archival data; public documents issued by each university and higher education authorities. The paper describes and analyzes objectives, strategies, organizational capabilities and performance measures in relation to the Nordic universities' innovative and entrepreneurial role and finally discusses reasons for varying empirical patterns.

Keywords: Entrepreneurial university, university strategy, regional innovation, performance measures

Introduction

Do Nordic universities have strategies and capabilities to play an innovative and entrepreneurial role in regional economic development? If so, how specific and directed are these strategies and capabilities for regional development? This paper intends to shed some light on these questions based on survey of 20 Nordic universities. The answers to the questions provide knowledge of what to expect from universities in terms of contributions to economic development and innovations in four European countries. Moreover, the results may provide input to European Union policies as well as national policies in the four Nordic countries of economic development involving contributions from the universities.

Universities have been shown to be important for regional innovation and development (e.g., Audretsch och Feldman, 1996) especially in areas with high-tech and research-intensive industry. Not only university research activity seems to matter for regional development but also university education (Andersson *et al.*, 2004). Case studies of proactive and regionally engaged universities with seemingly profound and positive regional effects have been reported from European universities (e.g., Clark, 1998; Jacobs

et al, 2003) as well as North-american universities (e.g., Bramwell and Wolfe, 2008; Youtie and Shapira, 2008). Cases with less than expected regional effects have also been reported (e.g., Feldman and Desrochers, 2003).

In the Nordic countries the regional innovation role of universities generally seems to be accepted by university management, academics and politicians (e.g., Braunerhjelm, 2007). In Sweden the law governing the Swedish universities was changed in 1997 to include the so called "third mission", in order to facilitate the transfer of knowledge to commercial and other organizations in order to enhance economic growth. Sweden, in its latest presidency of the European Union in 2009, launched the concept of the knowledge triangle in which the university research and education is linked to innovation activities in the society. Since the European Union launched its Lisbon declaration in the beginning of this century becoming a "innovation union" and world class in innovation and entrepreneurship has been on the political agenda in Europe. In the last decade Denmark, Finland, and Norway have changed laws in order to transfer intellectual property rights from university teachers to the universities creating larger incentives for the universities to commercialize research knowledge (Schmidt, 2007). The European Commission (2008) has, among other initiatives, recommended the member states to adopt IP, knowledge transfer and contract research policies in the member states' universities. Thus, you would assume that most Nordic universities now have clear and specific objectives and strategies as well as developed organizational capabilities regarding their regional innovation and entrepreneurial role and also well-developed performance measures that would indicate whether these objectives, strategies and capabilities are working or not.

More systematic knowledge on Nordic universities' strategies and capabilities in regards to their entrepreneurial and innovative role or third mission seem however to be lacking. While the entrepreneurial role of universities often is described as a bottom-up-process emanating from individual and entrepreneurial academics (Etzkowitz, 1983) the top-down process, i.e., university top management deciding on the university's entrepreneurial and regional development strategy also seem to be important (Clark, 1998).

This paper reports on a study of the 20 largest Nordic universities, 12 Humboldtian type universities and 8 technical universities, and their espoused objectives, strategies, organizational capabilities and performance measures regarding their entrepreneurial and innovation role related to regional and national economic development. The study is based on archival data; public documents, such as strategic plans, issued by each university. The study describes and analyzes objectives, strategies, capabilities and performance measures in relation to the Nordic universities' innovative and entrepreneurial role.

The remainder of the paper is organized in four sections. In the following section there will be an overview of research on universities' regional development role. In the second section there will be a description of the survey and the results. In the third section the results will be analyzed and discussed. The last section contains some concluding remarks and proposals for further research.

Universities' regional development role

Many universities founded in the early 1800s in the US had the explicit mission to contribute to economic development of their region, especially in the agricultural sector

(Goldstein, 2010). Massachusetts Institute of Technology (MIT) was founded in 1861 in Boston with the mission of *development and practical application of science in connection with arts, agriculture, manufactures, and commerce* (Breznitz *et al*, 2008:138). Also European universities were sometimes founded with a regional mission like Lund University in Sweden. Lund University became established some years (in 1666) after the Scania-region had been conquered by Sweden from Denmark. The rulers of Sweden wanted the Scania region to become Swedish-speaking and one of the prime tools for this was Lund University which had the mission to "Swedify" the region by educating Swedish-speaking priests that could learn the population of the Scanian region to speak and write in Swedish instead of Danish. This third mission of universities, besides education and research, the regional development role, has largely been institutionalized among the European universities (Genua and Muscio, 2009). In the EU the adoption of the Lisbon Strategy in 2000 and its follow up declarations stress the importance of the universities as central institutions in the pursuit for Europe to become more innovative, entrepreneurial and ultimately to raise economic growth of the European countries. These declarations are supported by researchers who argue for the universities to take a leading role in regional development (e.g., Clark, 1998; Etzkowitz, *et al*, 2000; Youtie and Shapiro, 2008). The European University Association (EUA, 2007) has issued a Lisbon declaration called *Europe's Universities beyond 2010: Diversity with a common purpose* where its members, among other things, are recommended to strengthen the universities' innovation capacities and promote university-industry collaboration.

In economic research universities' effect on regional economic development is predominantly viewed in the form of knowledge spillover from university research to nearby firms causing an increased innovative activity in these firms (Audretsch and Feldman, 1996; Drucker and Goldstein, 2007). The causal relations are however difficult to untangle. The co-location of university R & D, company R & D, highly specialized consultancy firms and a pool of highly educated and skilled labor seem all to be necessary to trigger and drive regional development (Saxenian, 1994). In Sweden the localization of company R&D has been shown to be primarily determined by the access to highly qualified labor (Andersson *et al*, 2004).

The positive regional effects of university R&D is however not an automatic one. If the regional environment has a limited number of relevant companies the effects may be very marginal or none (Braunerhjelm, 2008; Breznitz *et al*, 2008; Feldmann, 1994). The presence of university R&D is not important in all economic sectors. The most important regional effects have been shown in research intensive sectors such as pharmaceutical and biotech industries (Cooke, 2004). In a study (Laursen and Salter, 2004) based on the Community Innovation Survey in Great Britain 27 % of all companies used university input in their innovation processes. Heavy users of university input were large companies, companies in research intensive sectors and companies with an open innovation strategy.

Most research on the university as a regional developer has focused on the regional effects of university R&D either in terms of co-location of company R&D (Drucker and Goldstein, 2007) or patenting/licensing and spin-offs from the universities' technology-transfer offices (Rothaermel *et al*, 2007). Some research has also showed regional effects from university education (e.g., Andersson *et al*, 2007). Longitudinal case studies have showed how individual universities and their management teams have actively involved themselves in regional development processes not only through research and educational initiatives but also through active guidance and coordination of

policymakers, state and local government organizations and companies (Bramwell and Wolfe, 2008; Youtie and Shapiro, 2008).

The university can be seen as a multiproduct firm in relation to its regional development role (Salter and Martin, 2001). University R&D may create value for the companies in the region in six different ways (Salter and Martin, 2001):

1. Increase the stock of useable knowledge,
2. Train and educate students,
3. Create new scientific methods and instruments,
4. Create networks and social interactions,
5. Increase the capabilities to solve scientific and technological problems,
6. Start new companies.

To this could be added six more value creating functions mainly emanating from the educational and regional leadership functions suggested by Gibb *et al* (2009), Tornatzky *et al* (2002) and Lendel (2010):

7. Patent and license new knowledge,
8. Attract skilled labor and companies to the region,
9. Train and educate employees of companies and organizations,
10. Initiate, guide and lead the regional development agenda,
11. Act as an intermediary between national and regional development policy,
12. Preserve and develop the culture of the region.

According to Lester *et al* (2005) the university may contribute to four different regional development paths using different university products and services:

- To develop new industries in the region
- To transplant new industries into the region (from other regions)
- To diversify established industries
- To upgrade established industries

Lester *et al* (2005) observe a pattern of university products used when contributing to each of the four development paths based on case studies in Norway, Finland, Japan, UK and USA. When trying to develop entirely new industries in the region the university's contributions are usually in the form of start-up companies, patents and licenses, create networks and interactions between local entrepreneurs and research, organizing workshops and conferences and consultancy in the form of strategic planning and establishing standards. In the transplantation path the university utilizes mainly educational services such as education of PhD-students and other students, new educational programs, education of employees in transplanted companies and related companies and technical assistance. In the diversification path the university contributes mainly by developing networks and interactions between actors and filling structural holes. Lastly in the upgrading path the university contributes mainly by increasing problem solving capabilities, education students and employees and organizing workshops and conferences.

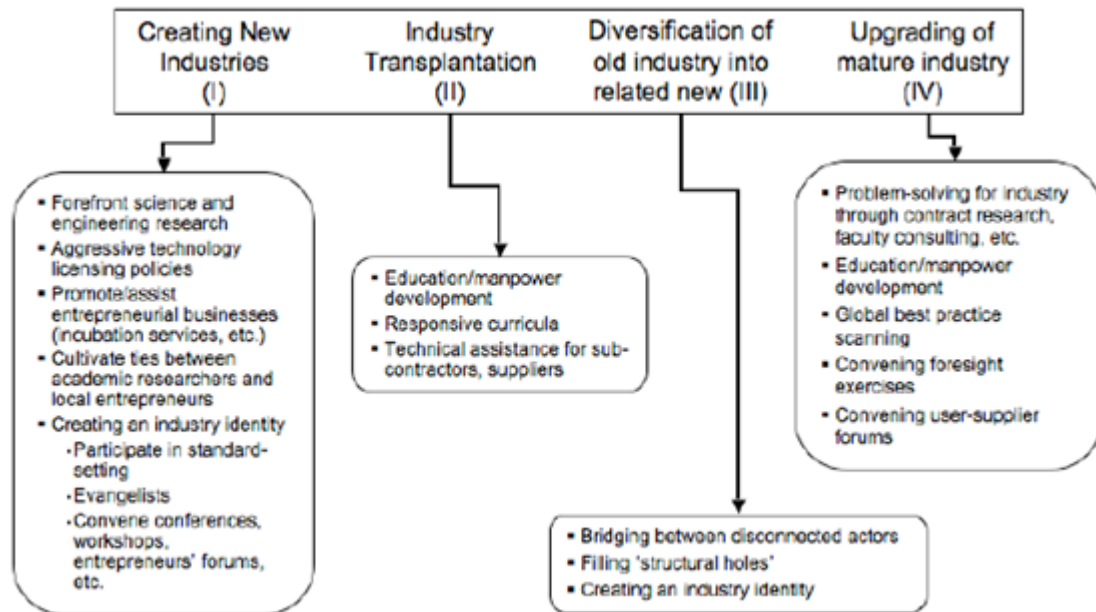


Figure 1. University roles in alternative innovation-led local/regional growth pathways (Lester *et al.*, 2005).

Lester *et al.* (2005) observes that the four different regional development roles requires different products, capabilities and resources both in the region and in the university. To describe the differences in university contributions in each regional development path we may contrast the university role in the two most extreme paths; creating new industries and upgrading established industries. The path of creating new industries are often dominated by some regional university, the innovation culture is characterized as science-driven and entrepreneurial and financing comes from founders themselves, friends families, informal and formal venture capitalists. The most important educational effort comes from PhD-students and engineering students with an entrepreneurial interest. The university technology-transfer comes primarily in the form of spin-offs. In the opposite path, upgrading of established industries, the university does usually play a supporting a role and the process is much more likely to be led by customers or company-internal activities. The development activities are usually financed by companies themselves and sometimes in combination with government funds. University education contributes most importantly by graduated master and bachelor students that became acquainted with the upgrading activities in the industry through internships, thesis work, seminars and lectures. Knowledge transfer from the university to the companies usually comes from long-term relationships.

Method

Most research on universities' role in regional development has focused on the two main university products: university R&D and higher education, and especially on university R&D (for an overview see Drucker and Goldstein, 2007). From a product strategy perspective a university may choose to focus more or less on R&D or on education as well as focus the R&D and educational activities on specific faculties, subjects, thematic issues etc. Apart from objectives and strategies in these areas we will also survey the

espoused performance measures and targets set by the university. Finally the organizational capabilities of the universities to act in their innovative and entrepreneurial roles and contribute to the regional economic development will be surveyed. Here we will focus on organizations, like Technology-Transfer Offices, and organizational arenas which have the specific aim to transfer knowledge from the university to established industries and/or to entrepreneurial environments.

Thus, the questions we wanted to answer in our survey are:

Do the Nordic universities have objectives (aims, missions, visions or similar) related to the regional development role?

Do the Nordic universities have strategies related to the regional development role?

Do the Nordic universities have performance measures and targets set related to the regional development role?

Do the Nordic universities have organizational capabilities related to the regional development role?

Twenty major Nordic universities were chosen for the survey as the Nordic countries have been very progressive in relation to the universities' third mission and entrepreneurial role. We expected the Nordic universities to exhibit a rather well-developed agenda for their third mission including what industries to support and how to proceed in order to support them.

The survey has so far been performed by collecting official documents from the twenty universities web sites and official reports concerning their third mission as well as relevant documents from state authorities. A list of documents used in the survey could be obtained from the author. We have compiled and categorized all objectives, strategies, performance measures, targets and capabilities relating to the universities' third mission. Only objectives etc on the university level have been compiled. Objectives, strategies etc that individual faculties, departments, institutes or other sub-organizational unit of the university may use have not been surveyed. Our intention was to give a university overview of regional development objectives, strategies, and capabilities and that major efforts at some individual faculties or departments would be visible in the university-wide documents.

Results

To describe our results we first give a brief example from one of the surveyed universities, Chalmers Technical University (CTU), located in Gothenburg, Sweden. The example illustrates what we have been surveying and how the innovative and entrepreneurial role may be expressed in objectives, strategies, performance measures and organizational capabilities in the university context. CTU is one of the universities that we have characterized as a more developed university in relation to its regional development role (see below). After the case illustration the overall results of the survey are exhibited and commented.

Chalmers Technical University (CTU), Gothenburg, Sweden

CTU is one of the older universities in Sweden which can trace its history back to 1829 when higher education started based on a donation by a local merchant: William Chalmers. It became over time more of a state institution as it became more and more dependent on state support for its activities. In 1940 CTU was given the right to organize PhD-education and since then research and PhD-education has been a substantial part of its operations. In 1994 the state decided to offer CTU a large donation and to convert into a private foundation which CTU accepted. CTU is now one of the few non-governmental universities in Sweden. CTU has (2011) roughly 11,000 students, 2,300 employees whereof 180 professors, and 2,700 MSEK in turnover of which 66 % is allocated to research and PhD-education.

CTU's mission states: *Chalmers shall be an outward-looking university of technology with a global appeal that conducts internationally recognized education and research linked to a professional innovation process* (Chalmers, 2011). Besides being excellent in research and education CTU stresses collaboration with the surrounding society and contributing to a more sustainable future. One of its overriding objectives is to have connected *strategy to its local, regional, national, European and international role* (Chalmers, 2011). CTU does however not make any statements regarding its leading or guiding role in the regional development process. One of CTU's goals is to be effective in putting research results in use. To achieve this goal CTU has organized its operations in eight areas of strength which are responsible for research, education and innovation (= putting research results in use) in each area. The organization is modeled on the so called knowledge triangle. The eight areas of strength are: energy, transport, production, nanotechnology, material science, life science, ICT and built environment.

The performance measures and targets tied to the goal of effectiveness of putting research to use are the following to be achieved by 2016 (Chalmers, 2011):

- Collaborative agreements with industry
At least 16 strategic collaborative agreements with industry, 5 % increase/year of financial support from industry.

Contracts for research-close development with industry reaches 150 MSEK per year.

Executive education turns over 200 MSEK and involves at least 200 CTU-teachers.

- Patents/licenses agreements and start-ups
15 patents per year with at least one Chalmers employee involved.
15 spin-offs per year and at least 100 MSEK raised in venture capital per year.

For the collaborative agreements CTU rely on the areas of strength and their managers. They are responsible for keeping contacts with industry and specific companies in order to initiate and make agreements with industry concerning strategic collaborations. In relation to the more entrepreneurial role CTU has to its disposal three science parks, two incubators and regional innovation office (Innovationskontor Väst) in collaboration with two nearby located smaller universities. The science parks have different orientations in terms of what type of start-ups and businesses they try to attract. Lindholmen Science Park has an emphasis on start-ups and businesses in ICT, digital media, and intelligent vehicles and transportation systems. Johanneberg Science Park has an emphasis on

start-ups and businesses in materials, built environment and energy. Sahlgrenska Science Park is located close to Gothenburg's university hospital and thus focus on life science start-ups and businesses.

Chalmers Innovation and Encubator are the two incubators at CTU focusing on early-stage support of business ideas from students and employees at CTU. Chalmers innovation is also a holding-company which may invest in start-ups and had by the end of 2010 invested in 102 companies of which 75 still were in operation turning over some 400 MSEK per year.

In summary, CTU is one of the larger and well-established technical universities in Sweden. It envisions its innovative role in society as both contributing to established industries and companies as well as supporting entrepreneurial processes in relation to start-up companies. CTU stresses the importance of effectively putting research into use and contributing to the companies and organizations innovation processes. The ultimate vision is to contribute to a sustainable society which is a very general claim. CTU has also explicitly specified eight knowledge areas where it feels it has special strengths and opportunities to contribute to innovation. CTU has also specified indicators and targets in order follow-up the goal of effectiveness of putting research in use. CTU has capabilities to support early-stage development, start-ups and businesses in the areas of strength in the form of three science parks, two incubators and a holding company in the Gothenburg region. In terms of with what and how CTU wants to contribute to regional economic development, goals, indicators and targets for following progress and organizational capabilities to sustain the efforts, CTU represents a case with well-developed strategies and structures for its innovative and entrepreneurial role in the regional development system. Table 1 summarizes the CTU-case.

Table 1: Survey of CTU innovative and entrepreneurial role

Innovative and entrepreneurial dimension	Chalmers Technical University
Vision/mission include regional and/or national innovative and/or entrepreneurial role	Yes (connected strategy to local, regional, national role)
Vision/mission include leading or guiding role in regional development	No (only collaborative role and general aim to contribute to sustainable society and future)
Specific objectives for regional/national innovative and/or entrepreneurial role	Yes (effective transfer of research results)
Strategies specified for regional/national innovative/entrepreneurial role	Yes (eight areas of strength, both research and education)
Specified performance measures for following progress on innovative/entrepreneurial role	Yes (indicators for number of collaborative agreements and spin-offs/patents)
Targets set for performance measures	Yes (targets set on five-year period 2012-2016)
Organizational capabilities to collaborate with established industries in region/nation	Yes (areas of strength managers responsible)
Organizational capabilities to support entrepreneurial processes in region/nation	Yes (regional innovation office, three science parks, two incubators)

Overall results of the survey

The results of the survey for the 20 Nordic universities are exhibited in appendix 1. The first eight columns covers the technical universities and the last twelve columns the more general (or Humboldtian type) universities which have many faculties. Apart from yes, (yes) intermediate (int), and no (no) answers to the different entrepreneurial and innovative dimensions different size-measures are indicated. The intermediate categorization indicates that the university in question has dealt with the dimension in its strategic plans but only partly or with the intention to further investigate or to deal with in future plans.

University vision and/or missions that indicate the university to take on a leading or guiding role in the region's development are rare. This survey has only identified three such universities, all of them universities in mid-size cities; Linköping University in Sweden, Norway's technical University (NTNU) in Trondheim and University of Tromsø. The objectives in this category are general and open-ended but they clearly state an ambition to act in a leading role in the region and to take on added responsibilities in this area.

Linköping University - an internationally distinguished university that is a driving force in a cosmopolitan region of knowledge

University of Tromsø - University of Tromsø shall be a driving force and a resource for the continuing economic development of Northern Norway.

The remaining 17 universities have not discussed the leading role of the university in regional and national development. Their role is generally described as more limited, i.e., making a contribution to the regional or national development in a particular area.

More common is to have vision, missions or overriding objectives related to the innovative and entrepreneurial role in the region or nation. 14 of the 20 universities (70 %) have such objectives. Some typical examples of objectives in this category are: DTU, Denmark - *The purpose of the University is to create value and promote welfare by exploiting the close and fruitful interaction between the technical sciences and the natural sciences to benefit society. Value is created through application in the industrial, business and commercial sectors and within the educational, health and public sectors.* Aalto University, Finland - *The national mission of the University is to support Finland's success and contribute to Finnish society, its internationalization and competitiveness, and to promote the welfare of its people.*

To give an example of university with no university mission or vision related to the entrepreneurial and innovative roles we may take Åbo Akademi in Finland. Åbo Akademi stresses, apart from research and education, instead its cultural role, having specific obligations concerning the Swedish language in Finland. In general universities without mention of a national or regional development role instead focus on their pursuit of excellence, in research and education, on their contributions in an international arena and to contributing to a sustainable society in general.

Specific goals for the regional/national innovative and entrepreneurial role are common. 13 universities declare such goals while 7 universities have intermediate goals, meaning they are in the process of further investigation and/or planning to decide on such goals in the future. The situation is similar for specific strategies for regional/national development roles with even more universities here still in investigation or planning processes.

When we surveyed performance measures and targets set for such performance measures significant differences appears among the Nordic universities. The regional and

national development missions, objectives etc university-wide and more specific objectives have shown somewhat higher relative rates in Denmark and Norway than Finland and Sweden. However, when it comes to performance measures and targets the differences are very pronounced. While all Danish and Norwegian universities have established performance measures and targets the Swedish universities, except for CTU in Gothenburg, have none. The same goes for Finnish universities; here the exception is Aalto University in Helsinki.

Finally, the organizational capabilities for collaborating with industry and supporting entrepreneurial processes revealed that most universities have such capabilities for entrepreneurial processes in the form of technology-transfer offices, incubators and similar organizations. Exceptions here were two of the Finnish universities. A bit less common were organizational capabilities interacting with industry. All the technical universities, except one had such capabilities, but only two of the Humboldtian universities. Most Humboldtian universities had plans or processes to expand these capabilities.

Table 2: Percentages of yes for surveyed dimensions in the groups of technical and Humboldtian universities and the four Nordic countries

Dimension	Technical Univ % yes	Humboldtian Univ % yes	Danish Univ % yes	Finnish Univ % yes	Norwegian Univ % yes	Swedish Univ % yes
University vision, mission, objectives include regional/national innovative and/or entrepreneurial role	75 %	67 %	100 %	25 %	75 %	71 %
University vision, mission, objectives include leading role of university in regional/national development	25 %	8 %	0 %	0 %	50 %	14 %
Specific goals for regional/national innovative and/or entrepreneurial role	62 %	67 %	100 %	25 %	75 %	57 %
Specific strategies specified for regional/national innovative/entrepreneurial role	50 %	37 %	60 %	0 %	75 %	14 %
Specific performance measures for following progress on innovative/entrepreneurial role	62 %	50 %	100 %	25 %	100 %	14 %
Targets set for performance measures	50 %	50 %	100 %	0 %	100 %	14 %
Organizational capabilities to collaborate with industry in regional/national development	87 %	17 %	40 %	25 %	25 %	71 %
Organizational capabilities to support regional/national entrepreneurial processes	100 %	83 %	100 %	50 %	100 %	100 %
Overall average	64 %	47 %	75 %	19 %	75 %	44 %

Overall the survey indicates that technical universities show a higher degree of having strategic plans including the regional and national development roles of the universities than their Humboldtian counterparts. The technical universities more applied profile is here believed to be one of the reasons for this. The Danish and Norwegian universities show a much higher degree of having strategic plans including the regional and national development roles than their Finnish and Swedish counterparts. While this survey has not systematically investigated reasons for these differences one factor has appeared during work with the survey. In Denmark the state authorities has since some years back demanded so called development contracts between the educational ministry and the individual universities (Schmidt, 2007). In these development contracts the university has to specify their development plans also concerning their entrepreneurial and innovative role. The universities also have to specify performance measures and set targets for the development period agreed on by the ministry and the university. In Denmark no money is yet involved and is considered to be complement to other governance mechanisms. In Norway a long term and substantial funding from the FORNY-fund to stimulate and support entrepreneurial universities and academic entrepreneurship might be one reason for increased university focus on their regional and national development roles (Rasmussen and Gulbrandsen, 2009).

Such a system of development contracts or long term state financing of entrepreneurial and innovative efforts does not exist in Sweden and thus it may explain the relative less developed situation in Sweden. Finland has a similar system of development contracts as Denmark but here these contracts concerns only focus education and research. In Finland the higher education reforms are moving in the direction of granting more autonomy perhaps resulting in less attention on the universities' third mission.

Concluding remarks

The EU, the national states in Europe and the Nordic states, put great efforts into making universities more active and connected institutions to the national and regional innovation systems to enhance national and regional development. Economic research has shown that universities can make substantial contributions for regional development, but has also pointed out that the development path is not an "one-way-street". The regional environment itself; its absorptive capacity and innovative culture do also matter. Previous research on the third mission of the universities and the entrepreneurial university has concluded that the third mission is more or less institutionalized in Europe (Genua and Muscio, 2009).

The result of the survey reported here describes a more nuanced picture when it comes to the Nordic universities' espoused objectives, strategies, organizational capabilities and performance measures related to the third mission and specifically regional and national development.

- Technical universities, Danish and Norwegian universities have the most developed objectives, strategies and performance measures while Swedish and Finnish Humboldtian universities are lagging behind.
- The reason for Danish and Norwegian universities more well-developed objectives and strategies may be caused by a more active governance from the state authorities than in Finland and Sweden.

- Many universities, especially Swedish universities, are still investigating and planning for future decisions regarding their entrepreneurial and innovative role in the region and nation.
- Finnish universities seem, according to this survey, the least likely to adopt objectives, strategies and performance measures related to their entrepreneurial and innovative role.
- While objectives, strategies and performance measures may lag behind at certain universities the university capabilities to assist entrepreneurial processes and university-industry collaborations seem to be more well-developed overall.

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Appendix 1

Appendix 1. Survey 20 Nordic universities																				
Dimension/University	CTU, Sweden	KTH, Sweden	LiU, Sweden	LTU, Sweden	DTU, Denmark	Ålborg U, Denmark	NTNU, Norway	Aalto, Finland	Cph U, Denmark	Århus U, Denmark	U Southern Denmark	Åbo Ak, Finland	Helsinki U, Finland	Tampere U, Finland	U Oslo, Norway	U Bergen, Norway	U of Tromsø, Norway	Lund U, Sweden	Uppsala U, Sweden	Gothburg U, Sweden
Orientation (T/H)	Technical	Technical	Techn/Humboldt	Technical	Technical	Techn/Humboldt	Technical	Techn/Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt	Humboldt
Number of students (approx 2011)	11000	13400	18100	17000	7600	17700	22000	19700	37900	32300	22700	7000	35000	23700	27400	14100	9000	47000	40000	38100
Number of employees (whereof professors)	2300 (180)	3400 (300)	3600 (320)	1600 (200)	3900 (150)	2900 (170)	5100	5000 (330)	9200	7200 (340)	3200	1300	8100	1800 (200)	7000	3400	2500	6100 (640)	6000 (600)	5900 (490)
Annual turnover (whereof % research and research education)	300 Meur (66 %)	440 Meur	370 Meur	166 Meur (56 %)	565 (75%)	290	670 Meur	430 Meur	1040 Meur	740 Meur	340 (55 %)	111 Meur	630 Meur	N/a	870 Meur	490 Meur	Na	730 Meur	590 Meur	590 Meur
University vision, mission, objectives include regional/national innovative and/or entrepreneurial role	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes
University vision, mission, objectives include leading role of university in regional/national development	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No
Specific goals for regional/national innovative and/or entrepreneurial role	Yes	Int	Int	Int	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Int	Int	Int	Yes	Int	Yes	Yes	Yes	Yes
Specific strategies specified for regional/national innovative/entrepreneurial role	Yes	Int	Int	Int	Yes	Yes	Yes	Int	Int	Int	Yes	Int	Int	No	Yes	Int	Yes	Int	Int	Int
Specific performance measures for following progress on innovative/entrepreneurial role	Yes	Int	No	Int	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Int	No	No
Targets set for performance measures	Yes	No	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Organizational capabilities to collaborate with industry in regional/national development	Yes	Int	Yes	Yes	Yes	Yes	Yes	Yes	Int	Int	Int	No	No	No	Int	Int	Int	Int	Yes	Yes
Organizational capabilities to support regional/national entrepreneurial processes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes